

Claims:

This listing of claims replaces all prior versions and listings of claims in the Application:

1-33. (Canceled).

34. **(Currently Amended)** A system for cooling electronic components, comprising:
a rack defining a plurality of slots, the rack holding a plurality of computer boards in the plurality of slots that support heat-generating computer components, the rack having open first and second sides that are opposed to each other and are open to circulation of ambient air from a computing workspace during operation of the system so as to permit fluid communication across the computer boards to an exterior of the rack, wherein the rack is one of a plurality of racks that are arranged to form a pair of rows on each side of a central aisle of the computing workspace, the plurality of computer boards in a particular slot accessible through at least one of the open first and second sides through the central aisle of the computing workspace during cooling of the computer components in the particular slot by air cooled through one or more cooling coils corresponding to the particular slot, and wherein the rack has third and fourth opposed sides between the first and second sides, the third and fourth opposed sides not open to circulation of ambient air from the computing workspace;

a plurality of air circulation fans adjacent one of the open first or second sides, wherein each of the circulation fans is located near an edge of one of the computer boards and positioned to circulate cooling air across an associated board, wherein the air circulation fans provide cooling air over the computer boards, wherein cooling air circulated over a first computer board is separate from cooling air circulated over a second computer board adjacent the first computer board;

the one or more cooling coils associated with each of the plurality of boards and located near one, but not both, of the first or second sides of the rack; and

a fan controller corresponding to each air circulation fan to control the speed of the corresponding fan according to a temperature sensed around a board corresponding to the air circulation fan.

35. (Previously Presented) The system of claim 34, wherein the one or more cooling coils are positioned immediately adjacent to the plurality of circulation fans.

36. (Previously Presented) The system of claim 34, each rack in the plurality of racks having associated air fans, cooling coils, and fan controllers, and wherein the pair of rows is arranged on each side of the central aisle, the central aisle disposed lengthwise in a container that houses the plurality of racks, the cooling coils located on sides of the racks away from the aisle and near outside walls of the container.

37. (Previously Presented) The system of claim 36, further comprising a cooling module located outside the container and fluidly connected to the cooling coils at one end of the container.

38. (Previously Presented) The system of claim 34, further comprising a separate cooling coil for each computer in a rack of computers.

39. (Previously Presented) The system of claim 38, wherein the computer boards are mounted horizontally on shelves of the rack, and each of the air circulation fans is matched to a space between adjacent boards.

40. (Canceled).

41. (Previously Presented) The system of claim 34, wherein the one or more cooling coils include coolant conduits having an external member and an inner baffle defining an annular channel therebetween and through which a cooling liquid flows.

42. (Previously Presented) The system of claim 34, wherein the cooling for each computer board is individually controlled by individually and separately controlling a fan speed, and thus air flow rate, for each computer board.

43. **(Currently Amended)** A system for cooling electronic components, comprising:
first and second rows of computer racks arranged on each side of a central aisle, each rack including:

a frame structure defining a plurality of spaces and part of a computer rack of the row of computer racks that have open front and back sides that are adjacent lateral sides, the front and back sides open to circulation of ambient air from a computing facility within which the rows of computer racks are located during operation of the system, and the lateral sides not open to circulation of ambient air from the computing facility,

a plurality of computer boards holding computing components and mounted in the frame structure, wherein the plurality of computer boards mounted in a particular space of the frame structure are accessible through at least one of the open front and back sides of the rack through the aisle during cooling of the computer components on the plurality of computer boards mounted in the particular space by air cooled through one or more cooling coils corresponding to the particular space of the frame structure;

a plurality of fans circulating air over the plurality of computer boards, each fan associated with a computer board and a temperature sensor near the computer board;

the one or more cooling coils arranged to cool air from the plurality of fans, wherein the cooled air is circulated over a first computer board to an exterior of the frame structure separately from the cooled air circulated over a second computer board adjacent the first computer board, the one or more cooling coils located near one, but not both, of the front and back sides of the rack; and

a plurality of fan controllers corresponding to the plurality of fans and programmed to control the speed of each fan according at least to a temperature sensed by each fan's associated temperature sensor.

44. **(Previously Presented)** The system of claim 43, wherein the open back side of each rack is adjacent an exterior wall of a container that holds the rows of computer racks and the one or more cooling coils located between the open back side and the exterior wall of the container.

45. (Previously Presented) The system of claim 44, wherein the racks extend substantially the length of the container.

46. (Previously Presented) The system of claim 43, further comprising a cooling module located outside the container and providing a cooling liquid to the plurality of cooling coils.

47. (Previously Presented) The system of claim 43, wherein the cooling coils include coolant conduits having an external member and an inner baffle defining an annular channel therebetween and through which a cooling liquid flows.

48. (Previously Presented) The system of claim 43, wherein the cooling for each computer board is individually controlled by individually and separately controlling a fan speed, and thus air flow rate, for each computer board.

49. **(Currently Amended)** A method for cooling electronic components, comprising:
providing a plurality of rack structures along opposed sides of a central aisle, each rack structure having an open first side and an open second side that are open to air circulation of ambient air with a computing facility in which the rack structures are located and lateral sides between the open first and second side that are not open to air circulation of ambient air with the computing facility, wherein the aisle is located adjacent one of the first and second open sides of the rack structures;

providing a plurality of computer boards in each rack structure in a manner to create open spaces between each of the next adjacent computer boards, each one of the plurality of computer boards accessible through at least one of the open first and second sides of each rack structure through the aisle during cooling of the computer components on each of the plurality of computer boards by air cooled through one or more cooling coils corresponding to each of the computer boards;

circulating air across the computer boards and through cooling coils adjacent one, but not both, of the first and the second side sides of each rack structure to an exterior of each rack structure using fans adjacent the second side of each rack structure, wherein each fan corresponds to a computer board, the circulated air across a first computer board separate from the circulated air across a second computer board adjacent the first computer board; and

controlling a speed of each fan using a sensed temperature around its corresponding board.

50. **(Previously Presented)** The method of claim 49, wherein providing a plurality of rack structures along opposed sides of a central aisle comprises providing a plurality of rack structures along opposed sides of a central aisle in a container, the open second sides of the plurality of rack structures located adjacent exterior walls of the container.

51. **(Previously Presented)** The method of claim 50, further comprising:
providing a cooling module located outside the container; and
fluidly connecting the cooling module to the cooling coils at one end of the container.

52. (Previously Presented) The method of claim 49, further comprising:
mounting the plurality of computer boards horizontally on shelves of the rack structure;
and
matching each of the fans to a space between adjacent computer boards.

53. (Previously Presented) The method of claim 49, further comprising:
providing at least one valve in fluid communication with the cooling coils;
modulating a cooling liquid to the cooling coils through the valve; and
controlling the valve according to at least one of a temperature and a pressure of the cooling liquid.

54. (Previously Presented) The method of claim 53, wherein providing at least one valve in fluid communication with the cooling coils comprises providing a cooling liquid to a coolant conduit having an external member and an inner baffle defining an annular channel therebetween and through which the cooling liquid flows, at least one of the cooling coils comprising the coolant conduit.

55. (Previously Presented) The method of claim 49, wherein controlling a speed of each fan using a sensed temperature around its corresponding board comprises individually and separately controlling a speed of each fan using a sensed temperature around its corresponding board.

56. (Previously Presented) The system of claim 34, further comprising:
a valve in fluid communication with the cooling coil for modulating a cooling liquid to the cooling coil; and
a valve controller in communication with the fan controller, the valve controlled by the valve controller according to at least one of a temperature and a pressure of the cooling liquid.